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ASTER TRADESCANTI AND A. MISER.—In response to a query in a recent GAZETTE, we have received the following:

A. Tradescanti is distinguished from *A. miser* by its greater smoothness; by the more definitely racemed inflorescence; and by the less marked serration of the middle of the more slender leaves; in var. *fragilis* the margin is entire. Both species are perplexingly variable, but, in my judgment, they may be clearly determined by the above points.—M. B. F.

A VALUABLE FERN CATALOGUE.—Mr. Geo. E. Davenport has in preparation, and nearly ready for printing, a Catalogue of the N. A. Ferns (north of Mexico) in the Davenport Herb., Mass. Hort. Soc., with notes giving localities, time of collection, names of collectors and donors, with occasional critical remarks, which he will publish provided he can obtain subscribers enough to enable him to do so. It will probably make a neat pamphlet of some twenty pages, and be a complete and accurate catalogue of N. A. Ferns based on actual specimens, with an appendix giving a list of all the doubtful species. The price will, of course, depend upon the number of subscribers, but probably in no case will it exceed 50 cents per copy. Subscriptions may be sent direct to Mr. Davenport's address at Boston, Mass.

THE LAW GOVERNING SEX.—Mr. Thomas Meehan referred to his observations originally reported to the Academy, developing an entirely new view of the laws of sex from that formerly prevailing, and which proved that what we called the female sex or final reproductive element in flowers, required a higher grade of nutritive power to perfect than the male. Though numberless facts have proved this point, there have always been some which, though they have offered no obstacle, have at least not been capable of explanation by the light of this theory, and among these have been some connected with dioecious plants. Among hermaphrodite and especially among monœcious plants there has been no difficulty in tracing the operation of this principle. In such coniferous trees as pines, firs, and larches, there is no difficulty in perceiving that branches once bearing female flowers, and maturing cones and seeds, produce nothing but male flowers when the branches come in time to be weakened by the shade of younger branches, or in some other way are imperfectly nourished. But when we come to the red cedar, *Juniperus Virginiana*, where cone trees are always wholly male, and others always seed-bearing, no difference could be found in the vigor of the trees. As in the monœcious cases we found the female element in exact proportion to nutritious advantages, we looked for the seed-bearing trees of the red cedar to be more vigorous than the males, but found instead all equally vigorous and healthy.

The enormous crop of seed borne by the silver maple this year, together with the confirmation of their truly dioecious character, have not only furnished an explanation of the apparent anomaly, but at the same time affords one of the best possible illustrations of the new theory.

As already noted in communications to the Academy, the flowers in *Acer rubrum* and *Acer dasycarpum* are alike in all trees when the petals first open. The anthers seem perfectly formed when another stage of growth commences. The pistils elongate in the female flowers while the filaments remain stationary, and the anthers never open; while in the male flowers the pistils do not grow, but the filaments elongate, and the anthers are carried on to perfection. Each tree is in fact strictly a male or a female tree.

It is a matter within common knowledge that after the maturity of the immense crop of seeds last month, the bearing trees were comparatively leafless, while the completely barren male trees abounded with foliage. There is a well-known morpho-

logical law, that the parts of flowers and the resulting seed vessels are metamorphosed leaves. In the case of these maples, the female trees, engaged in developing primordial leaves to perfect fruit, make few leaves in addition to those they started with in the spring, until, after several weeks, their fruitage has been completed. But the male flowers, dying immediately after perfecting their pollen, the male trees push into a heavy leaf growth, clothing the tree at a very early period with a dense foliage.

But another consideration intrudes itself here. The woody parts of a tree are made up mainly from the atmosphere through the medium of the leaves, and we may suppose that the greater the proportionate amount of leaves, the greater would be the woody product. Applying now these acknowledged principles to these maple trees, we find some remarkable results. Notwithstanding the male trees are relieved from the enormous strain on the powers of nutrition which the annual and often wonderfully heavy crops must entail; and notwithstanding they have, as in many cases this season especially, the advantage of a hundredfold more foliage at so early a period in the season, male trees are no larger, vigorous, or in any way more healthy than the female ones. In a crowded group of five trees, where a female tree is the central one, and a male on the outside, the male, with every advantage of food for the roots, and light and air for its large crop of leaves, and which happens to be an unusually large mass of foliage even for a maple tree, the girth of the trunk is four feet three inches, while the crowded female tree is five feet five inches, or two inches larger, with all its disadvantages.

We have been looking for weaker individuals in the male than in the female trees. But since he had first made his discoveries we have learned to distinguish much more clearly between vegetative and reproductive force. A large man is not necessarily a strong man in what we should call vital power; but we measure it by endurance under severe trials, and we see now that we need not have looked for weaker trees among the cedars or other diœcious trees, so much as for powers of endurance under reproductive or other essentially vital strains. Here we have this power thrown heavily in favor of the female tree; and he submitted that diœcism in trees instead of being an objection, is a powerful argument in favor of his views. [Verbal communication of Mr. Thomas Meehan to Acad. Nat. Sci. of Phila., June 4, 1878. From Proceedings, Part II.]

RECENT PUBLICATIONS.—*Forest Geography and Archæology*.—*A Lecture delivered before the Harvard University Natural History Society, April 13, 1878. By Asa Gray*.—In this masterly paper the author comes to the conclusion, fully corroborated by late geological discoveries in the arctic regions, "that the high, and not the low, latitudes must be assumed as the birth-place of our present flora; and the present arctic vegetation is best regarded as a derivative of the temperate." The distribution of forests is explained to be in accordance with the well known principles of physical geography, but no attempt is made to account for the anomalous features of the Pacific forest, as the author intimates it would lead simply to conjectures. The similarity between the vegetation of our own Atlantic slope, and that of the western coast of the Pacific, is well brought out and is so remarkable that Dr. Gray professes he will not be surprised to hear of a *Sarracenia* or *Dionœa* turning up in Eastern Asia. The object of the lecture was well accomplished in showing "that the races of trees, like the races of men, have come down to us through a pre-historic period; and that the explanation of the present condition is to be sought in the past, and traced in vestiges, and remains, and survivals; that for the vegetable kingdom also there is a veritable Archæology.

Report of the Botanist: [Chas. H. Peck.] Made to the Regents of the University of the State of New York. From the Thirtieth Annual Report.—The contents of this Report are best expressed by the summary given by the author himself. Suffice it to